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PATENTS ACT, 1977

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IN THE MATTER OF

European Patent (UK) 0 397 908

in the name of

Loewe Opta GmbH

I, DAVID NEVILLE PETERS, Chartered Patent Agent, of Dr. Walther Wolff & Co, 6 Buckingham Gate, London SW1E 6JP, hereby declare that I am the translator of the documents attached and certify that the following is a true translation to the best of my knowledge and belief.

DAVID NEVILLE PETERS

Dated 24 February 1995

DESCRIPTION

The invention concerns a method for the specification-consistent programming of a teletext receiver according to the classifying clause of the claim 1.

A teletext terminal as forming the basis of the invention, which displays a loadable program storage device, into which actual operating programs from an external data storage device are storable by way of a communications interface, is known for example from the DE-OS 36 33 572. The external data storage device can at the same time also be used as data protection storage device for the received or edited teletext pages, wherein the data can likewise be issued by way of the data communications interface and filed in the external data storage device. According to the state of the art, it is however also possible to access the program storage device of the external data storage device or the mass storage device directly from the microprocessor of the BTX decoder by way of the microprocessor present in the data storage device. Both the processors in that case communicate one with the other by known methods.

Such a method for the data exchange between a first and a second processor is known, for example from the DE-OS 36 05 421. Both the processors communicating one with the other are connected together by way of three lines. The processor respectively ready for transmission indicates the emission of data on a line allocated to the processor. The processor respectively ready to receive answers the indication of the processor ready for transmission, which in turn acknowledges the answer of the processor ready to receive. The reception of the acknowledgement of the processor ready to transmit is reported by the processor, which is ready for reception, to the processor ready to transmit, which upon this report begins with the emission of data. In order to exclude the case that both processors want to transmit at the same time, one of both the processors interrogates the line, which is associated for the other processor, twice. Only when the one processor ascertains on both interrogations, that the other processor does not want to transmit, does it begin with the emission of data; otherwise, it goes into the state of readiness for reception. Thus, a certain bus structure and a method are concerned, which enable the communication between both the processors.

In respect of the discussed general and individual communications terminal devices, the requirement exists that these shall be suitable for the processing of different services and for the reception of different signals. Thus, it is demanded for example in the case of pure teletext terminals that these can process the CEPT standard as well as also PRESTEL, ANTIOPE and other defined teletext standards. Furthermore, a telex traffic shall so be possible by way of such a terminal. Furthermore, the requirement exists that terminals of that kind can be deployed worldwide, i.e. thereafter to be equipped with national symbol set generators in order to enable the representation of the symbols and the user surface in the language of the respective country.

With respect to television reception apparatus with teletext decoders, the same requirements exist partially paired with telephone convenience circuits; the latter applies also to the described BTX terminals. Television reception apparatuses of that kind is used throughout Europe and the world. As example, it is to be mentioned that for example the channel occupancies of the individual transmitters in Munich are completely different from those from London or Paris. Equally, the requirement exists increasingly that peripheral devices, such as video plate storage devices and video recorders or sound recorders and so forth, which are connectible by way of a television receiver or a teletext terminal of general kind, can also be driven, for which appropriate control programs and operator guides are to be implemented. The list of the requirements on universally usable multi standard and multi functional terminals of that kind lets itself be enlarged as desired. According to the present state of the technology, only one individual adaptation of the hardware and software of such a device is always possible.

A teletext system with public terminal devices, by which information data can be called up by way of a remote reporting network from a teletext exchange and a central editing equipment connected thereat and be represented in the form of teletext pages on the image screen of a public terminal device, is known from the EP A3 0 113 022. The public terminal device displays a read-write storage device, in which information data coming from the BTX exchange are stored, which can be represented as off-line teletext pages on the image screen. The pages filed therein can be

called up from the storage device in off-line operation of the public terminal device and be brought to display. The teletext pages are stored after call-up or automatically by an external computer by way of the teletext exchange and the public telephone network. The external computer is in that case coupled with an editing device for the generation of the pages. Beyond that, the known system offers the utilisation of the central equipment for service and maintenance support with the use of off-line teletext pages and a diagnostic program. The results of the test and diagnosis programs can be in that case be transmitted to the image screen of the public terminal device directly and/or by way of the BTX exchange to the central equipment.

The central equipment beyond that offers the possibility of storing programs and data centrally practically without limitation, whilst only about 20 teletext pages and a restricted number of other data can be stored in the terminal. The eternal storage capacity of the terminal device is thereby used optimally. The test software in the terminal device can be executed in user-friendly fashion and thereby enables a convenient dialogue operation with the aid of the image screen present.

In order to be able to carry out the required functions - dialling the BTX exchange, selection of the desired image pages, interpretation of the data, storage and issue of the information data by way of the image screen -, a control needs corresponding programs, for example an off-line generating program. Beyond that, the possibility exists that the off-line pages can also be transmitted automatically from the central equipment by way of the teletext exchange to the public terminal devices.

The public teletext terminal in every case always remains a teletext terminal device and cannot be used for other applications. The integration of such a teletext device into another device system, for example into a colour television receiver, in order to control the functions of the television receiver by way of the teletext device part, and namely in dependence on programs which can be called up from an exchange, is likewise not hinted at. Beyond that, the state of the art permits only the access to a certain central equipment (external computer) with editing disc and thereby only the evaluation of the off-line information data which are offered by this certain exchange. A universal utilisation of the program offers of different exchanges is not provided. The known system is thus not usable universally.

Starting out from this state of the art, the invention is based on the object of developing a method which enables the universal utilisation of teletext devices of that kind without hardware changes being necessary at the device, for which the activation for the respective services and adaptations to the national languages and conditions of use shall be possible at the place of use itself.

The problem is solved according to the invention by the method steps indicated in the patent claim 1.

By way of the teletext decoder used as communications processor, it is possible according to the invention to activate the device individually adapted at the place of use. In that case, the system resorts to either remotely loadable operational and user software or software which can be called up from a data carrier and is played into an external data storage device directly by way of a corresponding interface. The activation is undertaken on the first commissioning or on a change of the use according to intention, wherein the device-specific properties are taken into account by these being retained in a teletext information page and supplied simultaneously as component on the delivery of the device and filed in a ROM, EPROM or EEPROM. Subject to observation of the identification features important for traffic of

a) Storage capacity of the second program storage device,
b) Internal and external interfaces and
c) Functionality features of the device,

the corresponding program, which is placed ready by the program source, is loaded according to the calling-up procedure according to the features 3 to 6 in claim 1.

It is evident that the indicated method permits a general and individual communications terminal device to be activated at the point of use with the structure indicated in the classifying clause, in such a manner that it is capable of processing the respective service with observation of the national languages. The program packets needed for this can be placed ready, for example in external computers of the BTX suppliers. The program packets must however fulfil the category requirements.

On application of this method in a television receiver with several processors, such as are for example indicated in the claims 4 and 5, it is possible to adapt a television receiver without any channel occupation and interface-supporting software to the actual conditions of use at each national point of use and to provide it with a user service in the respective national languages. When the television receiver is for example set up in London, an operating software can be played in, which enables the direct access to the individual receivable channels and their placing on the remote control or another call-up keyboard, can be played in remotely loadable by dialling a program source by way of the communications processor or through a connected external data device. When telephone convenience circuits are used beyond that in the same device, an adaptation to the peculiarities of the national network can likewise take place by ticking-over a corresponding operating software. The user surface is beyond that adaptable to the respective national language, "English" in the illustrated example.

When a light device is thereagainst set up in Paris, Berlin or Munich, an individual adaptation of like kind is possible with observance of the respective national language without hardware changes having to be undertaken at the device itself. When a teletext terminal is used as office terminal, an adaptation to the national standard is possible in simple manner. For the different standards, such as CEPT, ANTIOPE or PRESTEL, merely the appropriate operating software need be called up just as the associated user surface in respect of national language. With appropriate design of the input keyboard, the key occupations can be adapted to the national standards and possibly also be represented on the image screen in order to enable an easier editing.

Possibilities of the optional individual adaptation of such a device on the basis of the method are extendable as desired. It is however decisive that the device identifies itself by the three identification features. This can take place in the form of a code number or by direct indication according to the storage of the information data. An individual adaptation is however for example also possible when the storage capacity of the device is changed. This applies to the storage capacity of the communications processor, a central processor or equivalent other

processors of the device. A change is then possible through individual change of the original input of the identification features. For this purpose, the respective basic identification is filed in an EEPROM; whereby a change of the identification features is made possible.

Advantageous method steps in respect of the different structuring of the devices are indicated in the subclaims.

Of course, the program identification table page can be filed either in the discussed program source or in the device itself. It recommends itself however for the updating of the software state to associate the table page with the program source in order to indicate it on the image screen of the device, which is to be activated, after the call-up procedure. The call-up procedure on the switching-on of the device on first commissioning or on a change of the use according to intention can of course take place completely automatically provided that the connection to a conventional network or an ISDN-S network is established. Thus, it is possible for example by way of the teletext exchange to couple oneself to an external computer of a program supplier, which by reference to the transmitted information data indicates which program packets can be made available for a device with the indicated identification features. The use of the device then has the free possibility of choice between the programs which are transmitted after checking the available capacity of the individual processors and written into the storage devices. Of course, it is possible for additional data protection to file the received program packets in a mass storage device in order to read them in again for the new activation of the device. On the use of EEPROMs, a direct storage into the thus designed program storage devices is possible. Equally, with the use of battery buffers, the data and program storage devices can be filed on the basis of RAMs.

For the production of the communication by way of the communications processor (teletext decoder), a basic operational software must of course be filed in this in order for example to enable the establishment of the connection by way of the communications interface to the program source.

The identification categories contain software features from all three parts, whereby an upward compatibility of the different devices is to be achieved. When a device in the basic version for example displays no

printer interface, the identification page points this out; if a device variant of the same basic device thereagainst displays a printer interface, this functionality is indicated in the device-specific identification page. The program selection page indicates to the user which printer driver software programs are available for the device or transmits a question page, in which the type of the printer is to be entered, which is to be connected to the device.

When, for example, an ASCII keyboard or a DIN keyboard is connectible to the device, then the interface can likewise be activated in the described manner. This applies also to special keyboards subject to observation of the national symbol sets, such as Chinese symbols.

A supporting software for the operation of an image plate player or an image recording device is likewise possible when the corresponding functionality of the device is also taken up in the identification page and the device comprises such an interface. Of course, corresponding interfaces can also be inserted subsequently when the device system permits this. In this case, the identification page must also be taken up when the device comprises such an interface. When corresponding interfaces are inserted subsequently, when the device system permits this, the identification page must be changed appropriately in respect of the category "interface".

The method beyond that permits an individually adapted operator guidance system, according to which a menu-controlled user guide is provided for the individual functions, which is activatable in the respective national language. The corresponding user programs are likewise presented by the program source. The user programs are associated with the respective interfaces and functions and filed in the program storage device, which the respective processor accesses for the processing of these programs.

In a system with a central processor and subprocessors, wherein the communications processor of the teletext decoder is a subprocessor, the processing of the programs takes place by way of the central control unit and only subordinate programs by the respective subprocessor. The association of the program packets takes place through the operating program of the central processor. When, thereagainst, processors of equal

rank are used in the terminal device, as indicated in claim 6, the operational sequences and the communication between the processors must take place in controlled manner in order for example not to interrupt a computing program which is presently processed by a processor. The corresponding measures are indicated in claim 6. The communication of the processors one among the other can however also take place according to a method as indicated in the DE-OS 36 05 421. The microprocessor of the BTX decoder is in every case however the communications processor, by way of which the software packets are called up, received and passed on to the storage devices either directly on indirectly by way of further processors.

On the change of the use of a device, not all program parts need be exchanged of course when the offer of the program source is so structured that individual program packets, for example the adaptation to a certain printer or a certain picture plate device or a certain keyboard are offered exchangeably. The correspondingly addressed program packet, which is filed in the program storage device, is in that case written over by the new offered program packet.

The method according to the invention finds application for example in a device concept illustrated in the drawing for a teletext-television combination receiver with a central operating system with a processor and further subprocessors, wherein the BTX-decoder comprises a microprocessor as communications processor.

The teletext decoder displays a microprocessor 1, which is used as communications processor for the method according to the invention. During the first commissioning of the device or on a change of the service use of the device, the communications processor 1 is driven through actuation of a corresponding key on the keyboard 2 by way of the central operating system 24 and by way of its signal output 3 causes a driving of the modem 4, by way of which the connection to the not illustrated external program source takes place. The communication between the communications processor 1 and the external program source takes place by way of the modem 4, for which the signals from the program source are received by the processor by way of the input 5 and evaluated. The communications processor 1 or the microprocessor of the decoder is connected with the CRT controller 6. Between them, the symbolically represented teletext pages 25 as well as the

symbols sets 26 and the data for the television text illustrations 27 are processed and brought to display when the processor is activated for these certain services.

The communication between the central operating system 24 and the communications processor 1 takes place by way of the bidirectional bus 8. The following assemblies are drivable by way of the central operating system: VLP interface 9 (an image plate interface, a dialling aid module for a telephone 10, a remote operating system 11, the discussed keyboard 2, a VTR interface (video tape recording interface) 12, an auxiliary interface 13 (for example a V.24 interface), a printer interface 14 and a mass storage interface 15, for example a disc-drive interface.

Furthermore, the central operating system 24 communicates with the microprocessor 17, which is used as subprocessor, of the chassis or with the individual processors of the chassis, which are not illustrated more closely. For this, the bidirectional bus 16 is provided, which connects the corresponding interfaces between the central operating system 24 and each eternal communications interface of the microprocessor 17 of the chassis. The microprocessor 17 of the chassis serves for the control of the individual subprocessors and components of the TV chassis 18. The interlinking plane is identified by the block 19. The loadable applications and the software programs are stored in the EEPROM or battery-floated storage device 28 by way of the processor of the central operating system 24.

The output of the TV chassis leads by way of the line 20 to the display processor 21, which drives the picture tube or a flat display. The display processor 21 beyond that stands in connection by way of another line 22 with the CRT controller 6 so that the text information data are present directly as RGB information at the display processor. The representation takes place, as already explained, through the monitor 23, which can be a flat display or a conventional tube display.

A device thus equipped cannot get to the place of use as functionally capable unit and is activated there by dialling a program source and selection of the offered programs. The method provided according to the invention serves for this purpose. The program packets are stored in the not more closely illustrated program storage devices of the telext decoder

and/or in the storage device 28 of the central operating system 24 and/or the microprocessor 17 of the chassis 18. RAMs can be used for this purpose and are connected for data protection to a voltage source even when the device is switched off. However, EEPROMs can also be used. For data protection, the program can also still be protected by way of the mass storage device interface 15.

The programs and their selection depends on the capacity of the available program storage device which is addressed directly by way of the central operating system or the communications processor of the teletext decoder. Through the identification, the association is controlled at the same time in the corresponding storage devices. The control functions needed for this are transmitted with the program from the program source and cause the process sequence within the device. Thus, it is possible to activate all interfaces and blocks as indicated above the central operating system and to support their control by user guidance. An example of the loadable applications is illustrated in the right-hand half of the picture. Thus, program packets for telephone, for example dialling aid module, telephone number list, macro-deadline list, programs, information services internal page management, user guide, multi language automatic operation for dialling procedures, menu controls, pocket calculator functions and so forth, can be loaded. In the course of the communication with the connected program source, the corresponding data program packets are read out and written in. In place of the take-over of a remotely loadable software program from the external program source, these can also be written in from an external data storage device which can be reached by way of the auxiliary connection 13.

It is evident that the most diverse possibilities of representation and utilisation are given by the application of the invention to such a device and that the device need be activated for this only at the point of use.

CLAIMS

1. Method for the specification-consistent programming of a teletext receiver at the place of use with a microprocessor-controlled teletext decoder, with a program storage device, in which at least the basic operating programs for the processing and representation of the received teletext signals as well as for the operation of the communications interface to the transmission network or to an externally connectable data storage device are fixedly stored, and a second loadable storage device and an operating storage device in which the received teletext signals are filable page by page, wherein the microprocessor - after call up of the appropriate program from the program storage device by input of control commands by way of the input keyboard - prepares the signals stored in the operating storage device and in a given case translates, recalculates and issues them, characterised by the following method steps:

a) for the commissioning of or for a change in the specification-consistent use of the receiver, one or more teletext pages filed for receiver identification in the program storage device (ROM) are called up by input of an installation command and sent off after establishment of the connection by way of the switched-free communications interface (4) to the computer of a recallable program source, such as an external teletext computer or a connected data storage device, wherein the microprocessor of the teletext decoder is the communications processor (1) of the receiver;

b) the teletext pages for receiver identification contain, coded or uncoded, the following identification features:

I. storage capacity of the second or further program storage device,

II. internal and external interfaces and

III. functionality of the receiver;

c) after the establishment of the connection with the external program source and after the sending-off of the receiver identification pages, teletext pages (25) coming from the external program source are received and reproduced on the picture screen, which (pages) contain a synopsis of the operating programs in the program source, which are available for the receiver,

d) individual programs or several programs in combination are selectable from the listed operating programs, for example by means of selection control guided by cursor or by inscription of the programs or program identification numbers into a recall line in a teletext request page, for which the request commands associated with the individual programs are sent off to the program source during or after the selection;

e) the computer of the program source checks with the aid of the receiver identification whether the available storage capacity of the loadable program storage device (28) suffices to be able to load the requested programs and, in the case of sufficient storage capacity, send the programs for entry into storage to the or each second loadable program storage device (28); in case no sufficient storage capacity is available, an information page is transmitted, which indicates that parts of the programs cannot be taken over;

f) after repetition of the program recall procedure and selection of the program packets and until confirmation that the program packets do not exceed the available storage capacity of the loadable program storage device (28), the selected programs are loaded into the loadable program storage device (28) and the connection by way of the communications interface (4) is interrupted automatically so that the receiver is usable as intended.

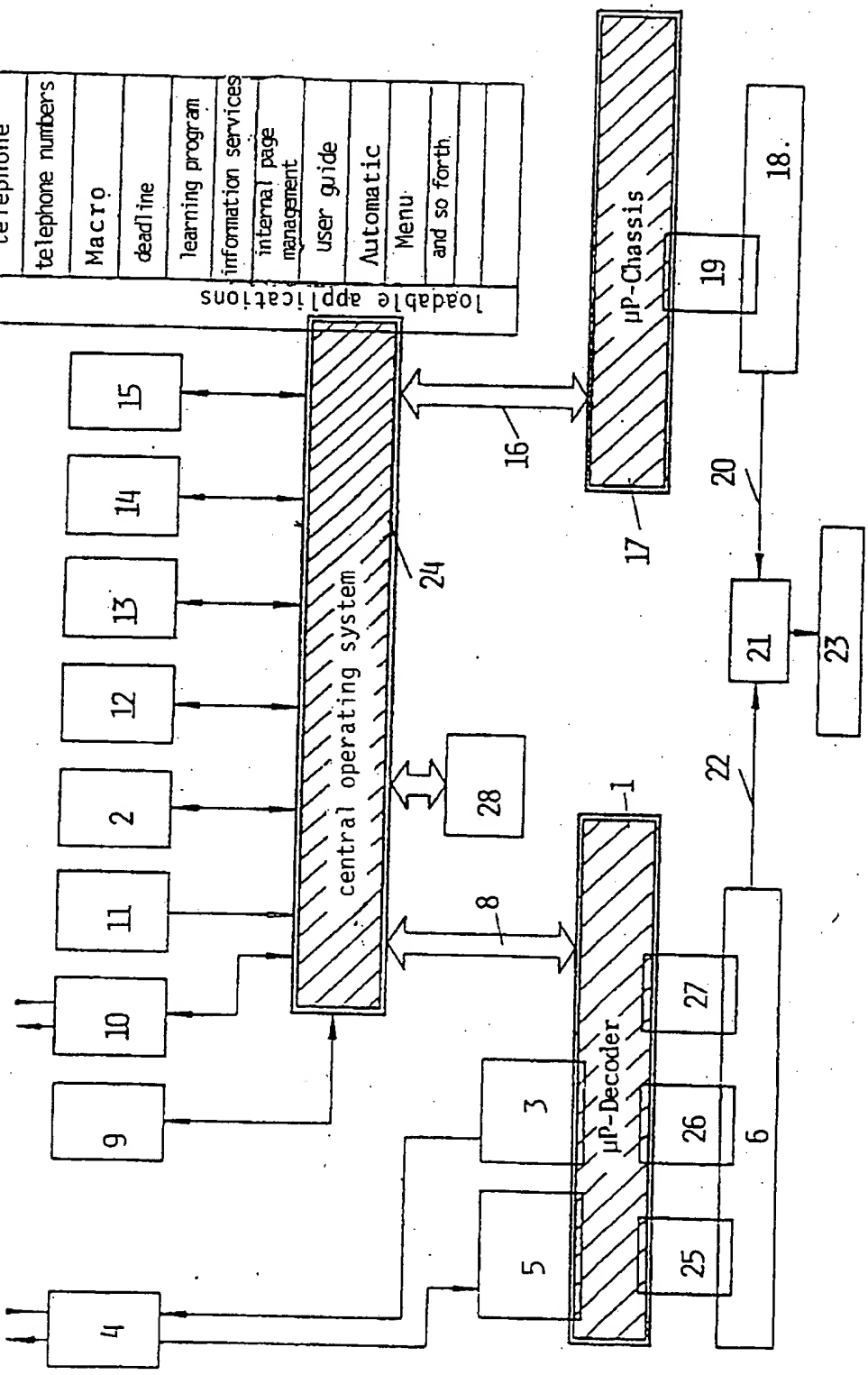
2. Method according to claim 1 in conjunction with a teletext decoder with a loadable mass storage device (28), characterised thereby, that the recalled program packets are stored in this and the individual program packets are written into the loadable program storage devices (28) of the processors by the microprocessor of the teletext decoder after the communications processor (1) has checked the available storage capacity of the program storage device (28), into which the recalled program packet is to be taken over, against the required storage capacity.

3. Method according to claim 1 or 2, characterised thereby, that the required storage capacities for the filing of the individual recallable program packets are indicated in the program information synopsis page.

4. Method according to one of the preceding claims, characterised thereby, that the received program packets are loaded by way of the communications processor (1) into the loadable program storage devices (28) of the microprocessors (24, 17), which are present in the receiver, by way of a bidirectional bus (8, 16) between the microprocessors.

5. Method according to claim 4, characterised thereby, that one of the further processors forms a central operation control unit (24) and the program packets are written into the loadable program storage devices (28) associated with this processor and the remaining processors operate as subprocessors which are activated in an in itself known manner from the central control unit by way of the bidirectional bus (8, 16) and released for computing processes and have access to the central loadable program storage device (28) by way of the central control unit (24).

6. Method according to claim 5, characterised thereby, that all processors (1, 24, 17) of the receiver have equal priority and the communication between the processors (1, 24, 17) is interrupted by each processor, which participates in the communication, independence on its own operational state and again switched free when a computing program in the respective processor (1, 24, 17) has run down or access is to be made to another processor or data from another processor are taken over into the operating storage device (28) independently of the performed computing process, wherein it is made certain by an acknowledgement operation in the case of different processing speeds of the processors (1, 24, 17) that running routines are not interrupted and no data loss due to speed arises.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